

What is claimed is:

1. An implantable medical device, comprising:  
an implantable housing for containing electronic circuitry;  
an antenna compartment integral to the housing having a dielectric window;  
5 a wire antenna within the compartment,; and,  
circuitry within the housing connected to the antenna for transmitting and  
receiving a modulated radio-frequency carrier through the dielectric window.
2. The device of claim 1 wherein the dimensions of the antenna are such that a  
10 significant portion of radio-frequency energy delivered to the antenna is emitted as far-  
field radiation
3. The device of claim 1 wherein the antenna compartment extends from a header  
for the device having a feedthrough therein for routing the wire antenna between the  
15 transmitting and receiving circuitry within the housing and the compartment.
4. The device of claim 1 wherein a distal end of the antenna is shorted to the device  
housing.
- 20 5. The device of claim 1 wherein the housing is constructed of conductive material  
and further wherein the antenna within the antenna compartment is separated from the  
conductive housing by a fixed distance on the order of between 1.5 and 2.5 millimeters.
6. The device of claim 1 wherein the wire antenna is coated with an oxide of  
25 titanium.
7. The device of claim 1 wherein the wire antenna is coated with an oxide of  
aluminum.

8. The device of claim 1 wherein the wire antenna is made of an alloy containing approximately 90% platinum and 10% iridium.

9. The device of claim 1 wherein the wire antenna is made of niobium.

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10. The device of claim 1 further comprising an antenna tuning circuit for matching the impedance of the antenna to the transmitting/receiving circuitry at a specified frequency of the radio-frequency carrier by loading the antenna with inductance or capacitance.

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11. The device of claim 10 wherein the tuning circuit comprises a variable tuning capacitor for adjusting the resonant frequency of the antenna.

12. The device of claim 10 wherein the tuning circuit further comprises a balun transformer.

13. The device of claim 1 wherein the device is a cardiac rhythm management device having rhythm control circuitry electrically connected to one or more electrodes adapted for disposition within or near the heart by one or more therapy leads.

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14. A method for constructing an antenna in an implantable device, comprising:  
providing an antenna compartment integral to a conductive housing for containing electronic circuitry, wherein the antenna compartment has a dielectric window;

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disposing a wire antenna within the antenna compartment; and,  
connecting circuitry within the housing for transmitting and receiving a modulated radio-frequency carrier to the antenna.

15. The method of claim 14 further comprising extending the antenna compartment from a header for the device having a feedthrough therein for routing the wire antenna between the transmitting and receiving circuitry within the housing and the antenna compartment.
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16. The method of claim 14 further comprising shorting a distal end of the antenna to the device housing.
17. The method of claim 14 further comprising disposing the antenna within the antenna compartment so as to be separated from the conductive housing by a fixed distance on the order of between 1.5 and 2.5 millimeters.
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18. The method of claim 14 further comprising coating the wire antenna with an oxide of titanium.
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19. The method of claim 14 further comprising coating the wire antenna with an oxide of aluminum.
20. The method of claim 14 wherein the wire antenna is made of an alloy containing approximately 90% platinum and 10% iridium.
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